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(54) Preventing removal of glazing bead

(57) A panel mounting assembly comprising a glazing bar adapted to receive the edge of a panel 12 and a substantially non-deformable removable external glazing bead 8 for location on the glazing bar to retain the panel against outward movement, said glazing bar having an outer retaining position (shown) and an inner removal position, and locking means 18, 20 extending between the glazing bar and bead which engage and prevent inward movement of the bead away from the retaining position when the outer edge of the bead is raised in relation to the bar. Thus, if an attempt is made to prise off the bead, the interlocking prevents the movement towards the pane necessary to allow arms 10, 11 to be released from beneath formations 6, 7 on the glazing bar. On the other hand, removal of seal 14 allows the releasing movement without engaging the interlocking parts.

Fig.1

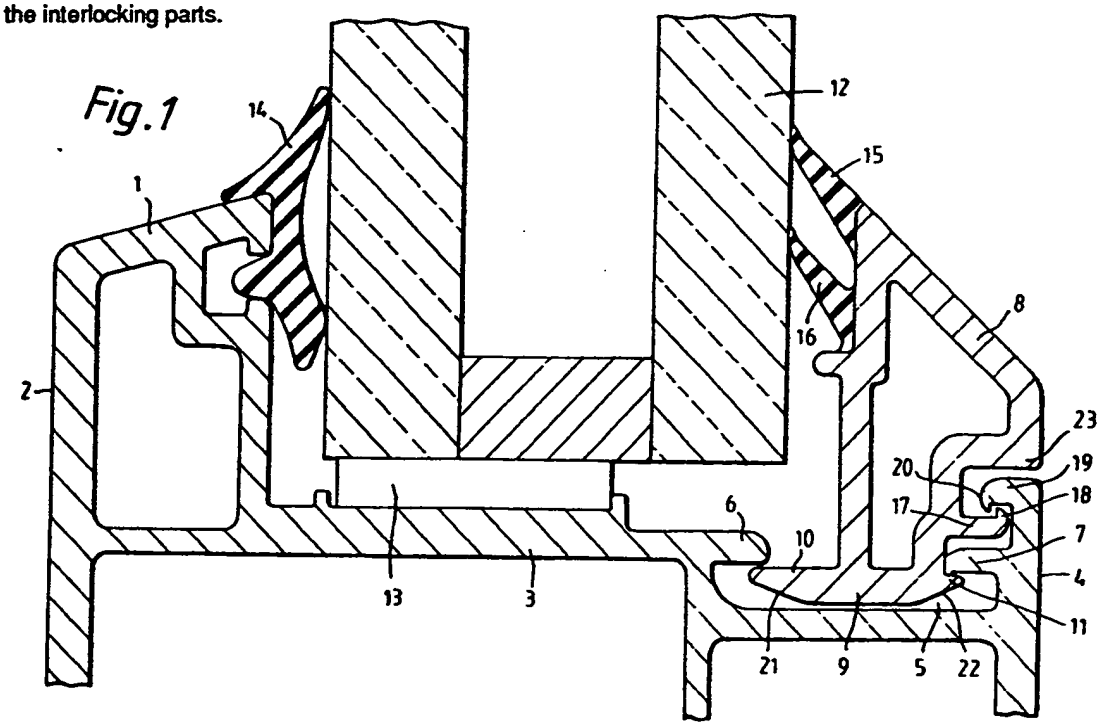

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Fig.1

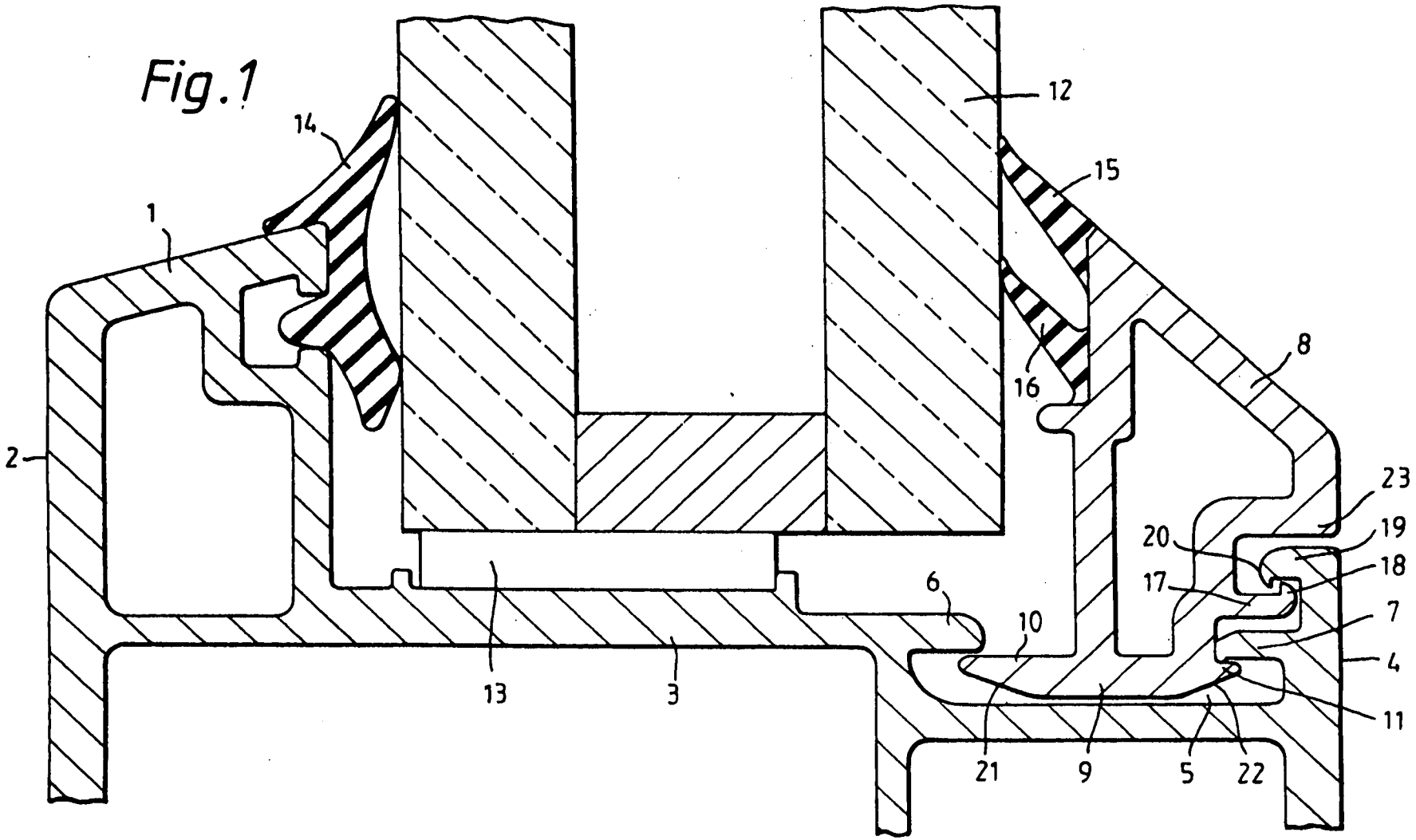


Fig. 2

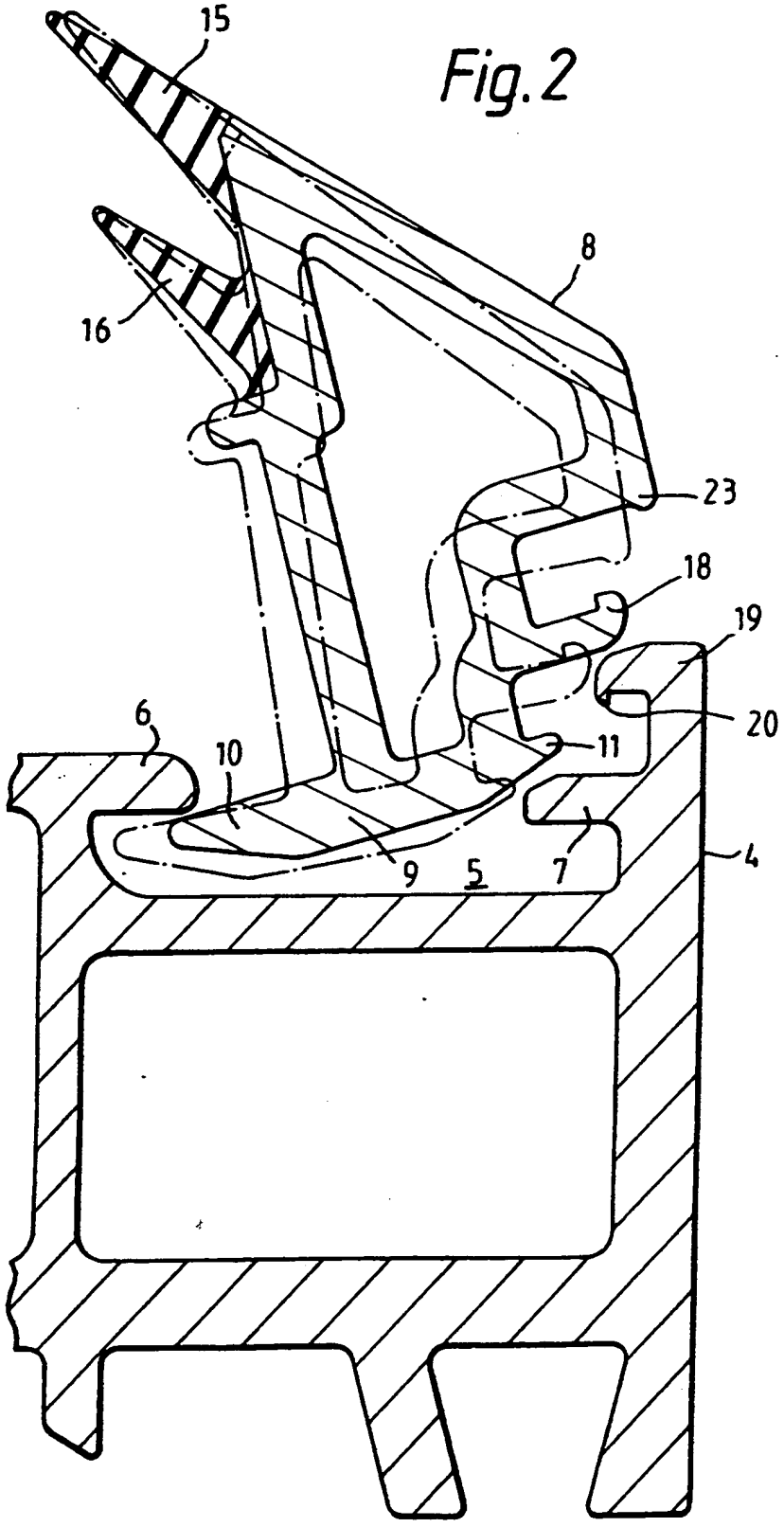
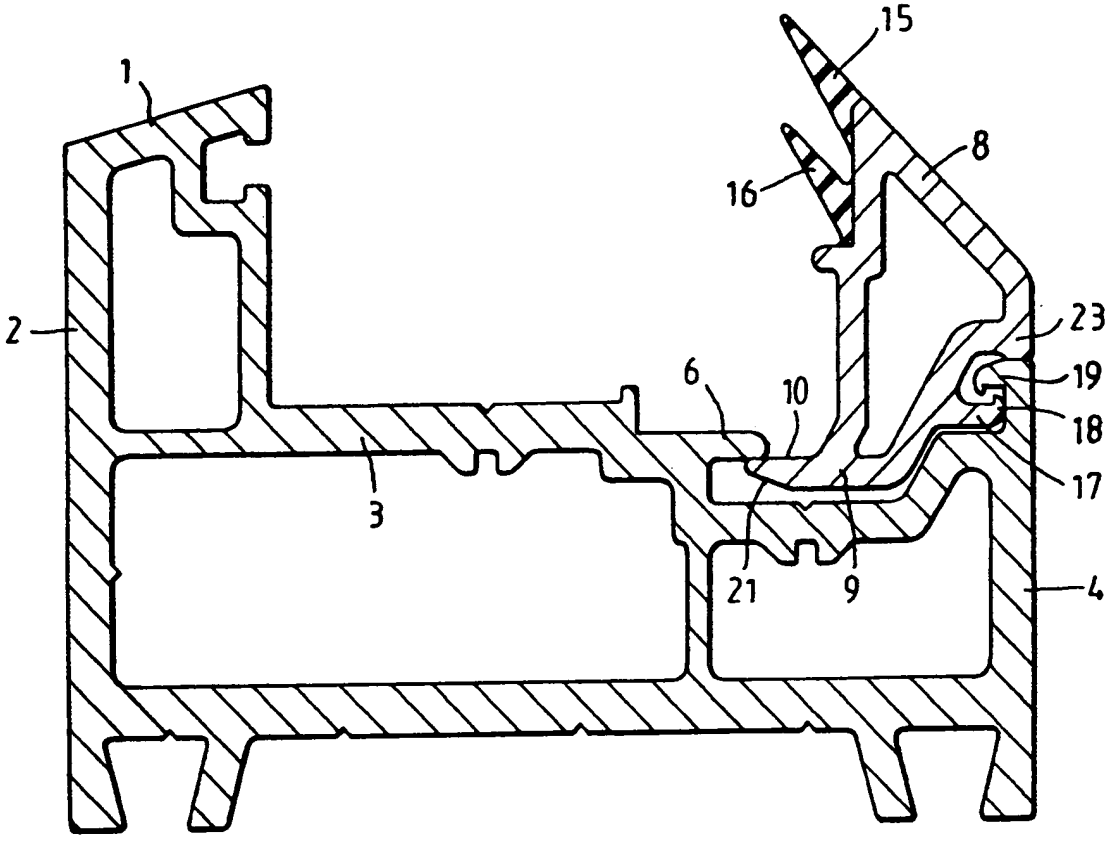


Fig. 3



PANEL MOUNTING ASSEMBLY

This invention relates to a panel mounting assembly which is particularly although not exclusively applicable for use in mounting a glass panel, for example in a window frame. The assembly can be used for opaque or transparent panels of other materials rather than glass but the terminology which is usually applied to window frames will be used with regard to the various parts.

The term "inner" is used herein to define the interior portion of the structure in which the panel will be employed and the term "outer" is used to indicate the outwardly facing direction.

The terms "upper" and "lower" are used in the appropriate sense as applied to the structure shown in the accompanying drawings, that is the lower or horizontal run of a window frame. It will be appreciated however that the terms must be reversed when considering the upper run of a window frame and the terminology is not appropriate if a vertically extending portion of the frame is considered.

It is known to use shaped glazing bars, which are sometimes referred to as "profiles" in window frame assemblies and such glazing bars can be made from aluminium, ferrous metals or synthetic plastics materials. It is also known to employ what are sometimes referred to as "shuffle glazing beads". With glazing beads of this type the panel is first inserted from the outside of the frame and moves fully against an internal upstand.

The glazing bead is then shuffled into place in retaining slots in the glazing bar and the glass is then

forced outwardly during insertion of an internal wedge gasket. The shuffle bead also moves outwardly with the glass and locks against appropriate retaining slots or retainers. Thus, in order to remove the glass it is necessary to first remove the inner glazing wedge.

This type of glazing bead system is sometimes subject to removal to allow illegal entry into the building. Such entry can be gained by any method which moves the bead inwardly and out of the retaining slots. This can sometimes be achieved by removing a rubber gasket which is sometimes placed between the glazing bead and the panel. Sufficient movement can be obtained by doing this to allow the bead to be moved inwardly to a position in which it can be released. More commonly however illegal entry is obtained by placing a wedge, for example a crow-bar, between the glazing bead and the glazing bar and forcibly attempting to move the bead against the outer gasket or, even if the gasket has been removed, to obtain the necessary inward movement to allow the bar to be released.

Any use of such an instrument will however necessarily tend to lift the glazing bead slightly in relation to the glazing bar and the present invention is intended to provide means to prevent inward movement of the glazing bead even in such circumstances.

According to the present invention a panel mounting assembly comprises a glazing bar adapted to receive the edge of a panel and a substantially non-deformable removable glazing bead for location on the glazing bar to retain the panel against outward movement, said glazing bar having an outer retaining position and an inner removal position, and locking means extending between the glazing bar and bead which engage and prevent inward movement of the bead away

from the retaining position when the outer edge of the bead is raised in relation to the bar.

In a preferred construction the locking means includes first and second locking teeth which engage when the bar is raised.

Preferably a first locking tooth is provided on the glazing bead and faces upwardly and the second locking tooth is provided on the glazing bar and faces downwardly.

Thus with this construction the first tooth can be provided on an extension which is located beneath a cover portion which carries the second tooth and which is provided on the glazing bar, when the bead is in the outer retaining position. With this arrangement the teeth are therefore covered beneath the cover portion and are not visible.

Many forms of glazing bar and bead can employ the invention and in a preferred construction the inner side of the glazing bead has an inner abutment portion which can engage beneath an inner location portion on the glazing bar, and an outer abutment portion which can engage beneath an outer location portion on the glazing bar, and including an inner glazing wedge which forces said panel outwards and said outer abutment portion into engagement with said outer location portion when in position.

With the construction referred to above the locking means can be located above the outer location portion on the glazing bar.

In another preferred construction the outer abutment portion on the glazing head and the outer location portion on the glazing bar are provided by the locking means.

Preferably the lower surface of the inner and outer abutment portions on the glazing bead are chamfered to assist location beneath the co-operating inner and outer location portions on the glazing bar.

The invention can be performed in various ways but two embodiments will now be described by way of example and with reference to the accompanying drawing in which :

Figure 1 is a cross-sectional view through part of the panel mounting assembly according to the invention;

Figure 2 is a cross-sectional view showing how the glazing bead is assembled into position; and

Figure 3 is a cross-sectional view showing an alternative construction.

As shown in Figures 1 and 2 of the drawings the panel mounting assembly according to the invention comprises a glazing bar 1 which can be made from any suitable material, for example aluminium or a synthetic plastics material and is in the form of an extruded profile. The glazing bar has an internal upstanding portion 2, a lower support portion 3 and an external part 4. The external part is intended to be mounted on the building with which the mounting assembly is to be used so that it faces externally. The external part 4 has a channel indicated by reference numeral 5 with an inner lip 6 and an outer lip 7 which act as inner and outer location portions for a glazing bead 8 which again can be made from, for example, aluminium or a synthetic plastics material. As will be seen from Figure 1 the glazing bead is an extruded profile and has a lower portion 9 from which protrude an inner rail 10 and an outer rail 11. When in

position the inner edge of the rail 10 acts as an inner abutment portion which engages beneath the inner location portion provided by the lip 6 on the glazing bar and the outer rail 11 acts as an outer abutment portion which engages beneath the outer location portion provided by the lip 7. Arranged between the upstanding portion 2 and the glazing bead 8 is the panel to be glazed which is indicated by reference numeral 12 and which, in the example being described, is in the form of a double glazed glass panel. The panel is carried on a panel spacer 13 located on the lower portion 3 of the glazing bar.

An inner glazing wedge gasket 14 made from a suitable resilient material is carried on the upstanding portion 2 and the upper part of the glazing bead 8 carries a pair of outer glazing seals 15, 16 which are attached to the glazing bead by being moulded onto it by a known process. The glazing seals 15 and 16 are again made from a suitable resilient material.

The glazing bead 8 also carries an extension in the form of a rail 17 which has an upstanding tooth 18 and the glazing bar has a cover rail 19 from which a tooth 20 protrudes downwardly.

In the arrangement shown in Figure 1 the glazing bead 8 is shown in a slightly raised position which is not the position it would occupy when in normal use but is shown herein to illustrate the manner in which the invention works. As will be seen in this raised position the teeth 18 and 20 will engage if the glazing bead is moved inwardly, that is to the left as shown in Figure 1 and prevent further movement thus locking the rail against inward movement. In the normal operating position however the lower portion 9 of the glazing bead 8, which is chamfered at 21 and 22, rests

on the bottom of the channel 15 and thus the teeth 20 and 18 are not in a position to engage. It will also be appreciated that the lower outer corner 23 of the glazing bead is close to or against the upper surface of the cover rail 19.

The dimension of the lower part of the glazing bead, that is between the outer extremities of the rails 10 and 11 is arranged so that it is greater than the distance between the edges of the lips 6 and 7. In order to locate the glazing bead in place it is therefore necessary to tip it and rock it into position as shown in Figure 2. This enables the inner rail 10 to be first moved beneath the lip 6 and then the other rail 11 is lowered with the rail 10 located fully beneath the lip 6. The glazing bar can now be shuffled or moved outwards so that the rail 11 engages beneath the lip 7 to the position shown in Figure 1.

In order to place a panel in position from outside it is therefore necessary to first move the panel as far as possible against the upstanding portion 2 without the inner glazing wedge 14 in place. This then enables the glazing bar to be tipped and lowered into position with the rail 10 in position beneath the lip 6. The panel is now pushed outwardly from within the building so that the glazing bar moves outwardly and the rail 11 engages beneath the lip 7. In this position the glazing seals 15, 16 begin to distort upwardly against the outer surface of the panel 12. The internal glazing wedge 14 is now forced into position thus holding the panel outwardly causing slight distortion of the glazing seals 15, as shown in Figure 1, and this also maintains the glazing bead in the position shown in Figure 1 with the rail 11 well beneath the lip 7.

In order to remove the glazing bead, in the event of the panel having to be replaced, the internal glazing wedge 14 is removed with a suitable tool and this enables the panel to be pushed inwardly and the glazing bar 8 to also move inwardly and subsequently be removed by a reversal of the mounting process.

With the glazing bead in its outer retaining position the teeth 20 and 18 do not engage. If however a crow-bar or wedge is driven between the corner 23 of the glazing bead and the upper part of the cover 19 and the glazing bead is prised upwards the teeth 20 and 18 are in a position to engage if an attempt is made to move the glazing bead inwardly towards its inner removal position. Thus the teeth will engage and prevent sufficient movement of the glazing bar to allow the rail 11 to move out of contact with the lip 7 to allow removal.

As the tooth 20 is arranged at the inner side of the cover rail 19 it is effectively hidden beneath the cover portion as is the tooth 18.

As a crow-bar or lever is commonly used in an attempt to remove shuffle-type glazing beads, it will be appreciated that the present invention provides a means for locking the bead against inward movement and thus preventing removal and unauthorised entry.

In the construction shown in Figure 3 the same reference numerals are used to indicate similar parts as in Figures 1 and 2. In this construction however the outer lip 7 on the glazing bar is omitted as is the outer rail 11 on the glazing bead. As shown in Figure 3 the material sections have also been slightly altered to facilitate production.

With this arrangement the rail 17 carrying the upstanding tooth 18 acts as an outer abutment portion which engages beneath the cover rail 19 which itself acts as an outer location portion instead of the lip 7 of the construction shown in Figures 1 and 2. The outer abutment portion on the glazing bead and the outer location portion on the glazing bar are thus provided by the locking means themselves.

CLAIMS

1. A panel mounting assembly comprising a glazing bar adapted to receive the edge of a panel and a substantially non-deformable removable external glazing bead for location on the glazing bar to retain the panel against outward movement, said glazing bar having an outer retaining position and an inner removal position, and locking means extending between the glazing bar and bead which engage and prevent inward movement of the bead away from the retaining position when the outer edge of the bead is raised in relation to the bar.

2. A panel mounting assembly as claimed in claim 1 in which said locking means includes a first and second locking tooth which engage when the bead is raised.

3. A panel mounting assembly as claimed in claim 2 in which the first locking tooth is provided on the glazing bead and faces upwardly and the second locking tooth is provided on the glazing bar and faces downwardly.

4. A panel mounting assembly as claimed in claim 2 in which said first tooth is provided on an extension which is located beneath a cover portion which carries the second tooth and which is on the glazing bar, when the bead is in the outer retaining position.

5. A panel mounting assembly as claimed in claims 1 to 4 in which the inner side of said glazing bead has an inner abutment portion which can engage beneath an inner location portion on the glazing bar, and an outer abutment portion which can engage beneath an outer location portion on the glazing bar, and including an inner glazing wedge which forces said panel outwards and said outer abutment portion

into engagement with said outer location portion, when in position.

6. A panel mounting assembly as claimed in claim 5 in which said locking means are located above said outer location portion on the glazing bar.

7. A panel mounting assembly as claimed in claim 5 in which said outer abutment portion on the glazing bead and said outer location portion on the glazing bar are provided by said locking means.

8. A panel mounting assembly as claimed in claim 5, claim 6 or claim 7 in which the lower surface of the inner and outer abutment portions on the glazing bead are chamfered to assist location beneath the co-operating inner and outer location portions on the glazing bar.

9. A panel mounting assembly substantially as described herein with reference to and as shown in Figures 1 and 2 or Figure 3 of the accompanying drawings.